Please find below and/or attached an Office communication concerning this application or proceeding.

| | Application No. | Applicant(s) |
|---|---|---|
| **Office Action Summary** | 09/894,478 | COVERSTON, HARRIET G. |
| | **Examiner** | **Art Unit** | |
| | Brian Goddard | 2171 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on <u>25 November 2002</u> .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) <u>1-69</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-69</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>28 June 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)      4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)      5)☐ Notice of Informal Patent Application (PTO-152)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> .      6)☐ Other: .

## DETAILED ACTION

### *Claim Objections*

1.      Claims 43, 47, 50-52, 58-59, 62-63 and 68 are objected to because of the following informalities:

The word "method" should be removed from the first line of claim 43 because a "system" is clearly claimed, not a "system method".

Claims 47, 50-52, 58-59, 62-63 and 68 clearly recite an article of manufacture by their preambles, but recite steps of a method (which cannot constitute an article of manufacture) in the body.  Referring to claim 47 for example, an article of manufacture cannot 'comprise' "receiving data for a file" as claimed.  That is, an article of manufacture can only 'comprise' physical, manufactured elements.  New transition phrases, or other appropriate modifications, are necessary for each of these claims such that they clearly constitute an article of manufacture.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2.      Claims 1-2, 5-8, 13-15, 18-22, 24-25, 28-31, 36-38, 41-45, 47-48, 51-54, 59-61 and 64-68 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2003/0031176 to Sim.

Referring to claim 1, Sim discloses a method for managing files in a file system as claimed.  See Figures 1-9 & 21 and the corresponding portions of Sim's specification for this disclosure.  In particular, Sim teaches "a method for managing files in a file system, comprising:

receiving [2115A (See Fig. 21E)] data for a file;

storing [2115C] the data for the file in a plurality of segments [blocks (also referred to as segments)]; {also see Fig. 9}

generating an index [See paragraphs 0217-0231 (block indices)] associated with the file indicating how the file data maps to the segments;

receiving an Input/Output request [See paragraphs 0048, 0080, 0097 & 0122-0129] with respect to an address [offset] in the file;

using the index [See paragraphs 0217-0231] for the file to determine ['search' command] the segment including data [See paragraphs 0122-0129] at the requested address in the file; and

accessing ['get' command] the determined segment including the data at the requested address" as claimed.

Referring to claim 2, Sim discloses the method for managing files in a file system as claimed.  See Figure 9 and the corresponding portion of Sim's specification,

specifically paragraphs 0089-0096, for the details of this disclosure. Sim's data is stored in the segments by writing the received file [900 or 950] to one segment [block], and writing further received data for the file to subsequent segments [blocks] if the last segment to which the received data was written has no more available space as claimed.

Referring to claim 5, Sim discloses the method for managing files in a file system as claimed. See Figures 9-10 and the corresponding portions of Sim's specification for this disclosure. In particular, Sim teaches the method of claim 1, as above, further comprising "providing a segment size [block size] that is at least greater than a byte size of a largest section [track] within the file; and writing each file section [track] to one segment [block]" as claimed.

Referring to claim 6, Sim discloses the method for managing files in a file system as claimed. See Figures 1, 3-4, 13 & 21 and the corresponding portions of Sim's specification for this disclosure. Sim teaches the method of claim 1, as above, further comprising "storing the segments [See Fig. 21E] in a primary storage [1530 (associated with a particular Distribution Server 1510)]; copying [distributing (See paragraphs 0115-0121)] at least one of the segments in the primary storage onto a secondary storage [at another node]; and releasing ['clean' command] at least one of the segments copied to the secondary storage [after replication portion of distribution], wherein space used by the released segment in the primary storage is available for use [See e.g. paragraph 0109]" as claimed.

Referring to claim 7, Sim discloses the method for managing files in a file system as claimed. See Figure 13 and the corresponding portion of Sim's specification for this disclosure. Sim teaches the method of claim 6, as above, "wherein as a result of releasing one or more segments [distributing the blocks], different segments for one file are capable of being stored in the primary storage and the secondary storage [on many different nodes]" as claimed.

Referring to claim 8, Sim discloses the method for managing files in a file system as claimed. See Paragraphs 0122-0125 of Sim's specification for this disclosure. Sim teaches the method of claim 6, as above, "wherein accessing the determined segment including the requested address [See claim 1 above] further comprises "determining whether the determined segment is available in the primary storage [See paragraph 0123]; and copying the determined segment from the secondary storage to the primary storage if the determined segment is not available in the primary storage [See paragraph 0125]" as claimed.

Referring to claims 13 & 14, Sim discloses the method for managing files in a file system as claimed. See paragraphs 0224-0231 of Sim's specification for this disclosure. Sim teaches the method of claim 6, as above, further comprising "maintaining metadata for each segment [block] that is also maintained for files in the file system [See paragraph 0225]; and using the metadata for segments [blocks] and files to determine when to copy segments and files to the secondary storage and when to release segments and files in the primary storage [popularity index and usage rating]" if used space in the primary storage reaches a threshold level [capacity] as claimed.

Referring to claim 15, Sim discloses the method for managing files in a file system as claimed. See the abstract, summary, and selected portions of the specification mentioned above for this disclosure. Sim's file data in all the segments [blocks] for the file [large payload file] is capable of being larger than a storage capacity of the primary storage as claimed.

Referring to claim 18, Sim discloses the method for managing files in a file system as claimed. See Figures 7-11 and the corresponding portions Sim's specification for this disclosure. Sim's segment [block] does not have a file name and is not represented as a file in the file system as claimed.

Referring to claim 19, Sim discloses the method for managing files in a file system as claimed. See Figures 7-11 and paragraphs 0224-0231 for the details of this disclosure. Sim's index is stored in the file [in the file metadata], wherein no user data is stored in the file [metadata] and all the user data is distributed in the segments [blocks] as claimed.

Claim 20 is rejected on the same basis as claim 6. See the discussions regarding claims 1 and 6 above for the details of this disclosure.

Referring to claim 21, Sim discloses the method for managing files in a file system as claimed. See Figures 13 and 21 and the corresponding portions of Sim's specification for this disclosure. Sim teaches the method of claim 20, as above, "wherein multiple segments [blocks] are written in parallel [See discussion of Fig. 21] to multiple storage devices in multiple drives [at multiple nodes]" as claimed.

Referring to claim 22, Sim discloses the method for managing files in a file system as claimed. See Figure 21 and the corresponding portion of Sim's specification for this disclosure. Sim teaches the method of claim 20, as above, further comprising "reading segments [blocks] on multiple storage devices from multiple drives [at multiple nodes] to stage multiple segments in parallel [See discussion of Fig. 21] into the primary storage [see above]" as claimed.

Claims 24-25, 28-31, 36-38 and 41-45 are rejected on the same basis as claims 1-2, 5-8, 13-15 and 18-22 respectively. See the discussions regarding claims 1-2, 5-8, 13-15 and 18-22 above for the details of this disclosure.

Claims 47-48, 51-54, 59-61 and 64-68 are rejected on the same basis as claims 1-2, 5-8, 13-15 and 18-22 respectively. See the discussions regarding claims 1-2, 5-8, 13-15 and 18-22 above for the details of this disclosure.

### Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.      Claims 23, 46 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sim.

Referring to claim 23, Sim does not explicitly teach that the drives comprise tape drives and the storage devices comprise tape cartridges as claimed. However, Sim

does teach that "the storage volumes [devices] can be any collection of storage devices, e.g., disk arrays attached to a server, RAID...or Storage Area Network (SAN)." See paragraph 0118 for this disclosure. Thus, Sim directly suggests modifying the system to use any common types of storage devices. The examiner takes Official notice that tape drives with removable tape cartridges were storage devices of common practice in the art at the time the invention was made, commonly used in distributed storage systems such as Sim's. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use tape drives with removable tape cartridges as Sim's storage volumes because this would provide a stable storage environment with greater backup/restore reliability, as was commonly associated with tape-based storage.

Claim 46 is rejected on the same basis as claim 23, in light of the basis for claim 43 above. See the discussions regarding claims 20, 23 and 43 above for the details of this disclosure.

Claim 69 is rejected on the same basis as claim 23, in light of the basis for claim 66 above. See the discussions regarding claims 20, 23 and 66 above for the details of this disclosure.

4.      Claims 3-4, 26-27 and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sim in view of U.S. Patent No. 6,415,280 to Farber et al.

Referring to claim 3, Sim teaches the method of claim 1, as above, wherein each segment [block] has a fixed byte length [See paragraph 0227], wherein the index provides a segment order indicating an order in which file data is written to the

segments [See Figs. 9-10 and paragraphs 0223-0229], and wherein the index for the file is used to determine the segment including data at the requested address in the file by determining an offset into the file including the data at the requested address [See paragraphs 0015-0016 & 0097] as claimed.

Sim is silent on the details of the means by which the segment [block] number containing the requested address is determined from the offset provided. Thus, Sim does not explicitly teach "determining an integer quotient value resulting from the offset into the file divided by the fixed byte length, wherein the segment including the data at the requested address is the segment at the integer quotient value in the segment order" as claimed.

Farber discloses a system and method similar to that of Sim, wherein the segment to be read is identified "by dividing the specified file offset... by the fixed size of a segment..." See column 21, lines 16-50 for the details of this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Farber's functionality of dividing the offset by the fixed byte length to the system and method of Sim in order to determine the segment [block] number containing the requested address. One would have been motivated to do so because this would be an efficient, direct and logical means to obtain this information and fill Sim's silence of the implementation details.

Referring to claim 4, the system and method of Sim in view of Farber as applied to claim 3 above discloses the invention as claimed. See paragraphs 0131-0136 of

Sim's specification for this disclosure. Sim's (as modified by Farber) fixed byte length of each segment [block] is determined by user input as claimed.

Claims 26-27 are rejected on the same basis as claims 3-4 respectively, in light of the basis for claim 24 above. See the discussions regarding claims 1, 3-4 and 24 above for the details of this disclosure.

Claims 49-50 are rejected on the same basis as claims 3-4 respectively, in light of the basis for claim 47 above. See the discussions regarding claims 1, 3-4 and 47 above for the details of this disclosure.

5.      Claims 9-12, 16-17, 32-35, 39-40, 55-58 and 62-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sim in view of U.S. Patent No. 6,490,666 to Cabrera et al.

Referring to claim 9, it is unclear whether Sim's system stores a partial version of the released segment as claimed. Sim teaches storing metadata of the released segment on the primary storage after the segment is released (See above cited portions regarding file/block metadata), but does not explicitly state that the metadata is "a partial version" of the released segment as claimed. However, the storing of metadata of the released segment is suggestion in itself for storing a partial version of the released segment.

Cabrera discloses a system and method similar to that of Sim, wherein a partial version of the released segment is stored on the primary storage. See Figures 3-5 and the corresponding portions of Cabrera's specification for this disclosure. Specifically,

Cabrera teaches "storing a partial version ['stub file' – at least one data block buffered from the original file] of the released segment [file portion (or block)] including less than all data in the segment, wherein the segment data not in the partial version is stored in the secondary storage [migrated to remote storage], wherein the partial version [stub file] remains on the primary storage [local storage] after the segment is released" as claimed. Also see e.g. column 1, lines 53-58 and the discussions of steps 604 & 704 for an overview of this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Cabrera's storage of a stub file for a released file block into the system and method of Sim so as to store a stub file on the primary storage for each released file segment. One would have been motivated to do so in order to speed access of the file segments to the requesting application programs from the primary storage as taught by Cabrera in the background of the invention section, and further because of Sim's suggestion as discussed above.

Referring to claim 10, the system and method of Sim in view of Cabrera as applied to claim 9 above discloses the invention as claimed. See Figures 9-11 & 21 and the corresponding portions of Sim's specification, as well as Figures 3-7 and the corresponding portions of Cabrera's specification for this disclosure. Sim, as modified by Cabrera, teaches the method of claim 9, as above, "wherein the partial version of the determined segment is on the primary storage and wherein accessing the determined segment including the requested address further comprises:

accessing [Cabrera: Step 708] the partial version [stub file – buffered data block]

of the determined segment on the primary storage [local storage – local DS relative to

requesting application] to access that data therein;

reaching the end [Cabrera: Step 724] of the partial version when accessing data

therein;

staging [Cabrera: Steps 706-712] from the secondary storage to the primary

storage data from the determined segment that is not in the partial version; and

accessing [Cabrera: Step 722] the data from the determined segment staged

from the secondary storage to the primary storage" as claimed.

Referring to claim 11, the system and method of Sim in view of Cabrera as

applied to claim 9 above discloses the invention as claimed. See Figures 3-5 and the

corresponding portions of Cabrera's specification for this disclosure. Cabrera's

implementation of stub file storage, as implemented in Sim's system, teaches that the

partial version [stub file] is stored only for a first segment [first file block/portion] of the

segments associated with the file [only one stub file per file, corresponding to the first

file block] as claimed.

Claim 12 is rejected on the same basis as claim 10. See the discussion

regarding claim 10 above for the details of this disclosure.

Referring to claim 16, Sim teaches the method of claim 6, as above, further

comprising "reading data from one target segment on the secondary storage" as

claimed. See the discussions regarding claims 1-6 above for the details of this

disclosure. Sim does not explicitly teach the steps of determining whether a stage

attribute is specified and initiating read requests to stage the number of subsequent

segments as claimed.

Cabrera, as mentioned above, discloses a system and method similar to that of

Sim, wherein a stage attribute is specified for staging subsequent segments as claimed.

See Figures 5-6 and the corresponding portions of Cabrera's specification for this

disclosure. Cabrera teaches "determining whether a stage attribute [502] is specified

indicating a number of segments to stage ahead; and initiating read requests [Steps

614-616] to stage the number of subsequent segments following the target segment

from the secondary storage to the primary storage" as claimed.

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to add Cabrera's staging functionality based on the stage attribute

to the system and method of Sim, in order to determine how many file segments to

stage ahead. One would have been motivated to do so in order to prevent staging more

segments than necessary, making the system more efficient in memory usage and

speed.

Referring to claim 17, the system and method of Sim in view of Cabrera as

applied to claim 16 above discloses the invention as claimed. See Figure 5 and the

corresponding portion of Cabrera's specification for this disclosure. Cabrera's stage

attribute [502], as applied in the system of Sim, is user specified. Thus the combination

discloses receiving user input indicating the number of segments to stage ahead as

claimed.

Claims 32-35 are rejected on the same basis as claims 9-12 respectively, in light of the basis for claim 29 above. See the discussions regarding claims 1, 6, 9-12 and 29 above for the details of this disclosure.

Claims 39-40 are rejected on the same basis as claims 16-17 respectively, in light of the basis for claim 29 above. See the discussions regarding claims 1, 6, 16-17 and 29 above for the details of this disclosure.

Claims 55-58 are rejected on the same basis as claims 9-12 respectively, in light of the basis for claim 52 above. See the discussions regarding claims 1, 6, 9-12 and 52 above for the details of this disclosure.

Claims 62-63 are rejected on the same basis as claims 16-17 respectively, in light of the basis for claim 52 above. See the discussions regarding claims 1, 6, 16-17 and 52 above for the details of this disclosure.

## *Conclusion*

6.      The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,449,688 to Peters et al. and U.S. Patent Application Publication No. 2002/0194209 to Bolosky et al. are both considered particularly pertinent to applicant's claimed invention.

The remaining prior art of record is considered pertinent to applicant's disclosure, and/or portions of applicant's claimed invention.

7.      Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Brian Goddard whose telephone number is 703-305-

7821. The examiner can normally be reached on M-F, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for

the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is 703-305-

3900.

bdg

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